

# Team Meeting

09/13/2016

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Scott Smith

Recorder of Minutes: Eric Hill

## Planned to Cover

- Roles and responsibilities of team contract
- Finalize team contract and sign
- Client interview questions

## Old Business

- Team contract was worked on and completed except for roles and responsibilities.

## New Business

- Google drive is wanted to be created so team can share files
- Meeting time is wanted to be rescheduled to better fit schedules

## What was Covered

- Team contract
  - Decided on roles and responsibilities
  - Finalized and signed team contract
- Client interview
  - Brainstormed as a group and created 20 questions to ask our client for our client interview on Thursday.
  - Decided that Marshall Bolen will ask the questions because he is the primary client contact while others can ask questions as they have them.
  - Eric Hill will be the recorder of the question answers because he is in charge of keeping documentation.
- Changing meeting time
  - Changed the meeting time to every Wednesday at 2:30 at the library so our meetings were not limited to an hour
- Creating Google drive
  - Created google drive and made accessible for team members to share documents.

## Need to Bring to Next Meeting

- Finished client interview questions

# Team Meeting

09/15/2016

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Scott Smith

Recorder of Minutes: Lucio Barajas

## Planned to Cover

- Meet client for project
- Do client interview for project

## Old Business

- None

## New Business

- Need someone to be in charge of the wiki page

## What was Covered

- Meet client for project
  - Met Scott Smith for the first interview
- Do client interview for project
  - Conducted our interview to answer questions
- Need someone to be in charge of the wiki page
  - Lucio Barajas was selected to create the wiki page

## Need to Bring to Next Meeting

- Need to set up a presentation
  - How are we going to analyze sediment
  - Find current method that others use to clean sediment
  - Literature review table

# Team Meeting

09/21/2016

Time start: 2:27pm

Location: UI Library

Attendance: Eric Hill, James Rockwell, Marshall Bolen, Lucio Barajas

Recorder of Minutes: Lucio Barajas

## Old Business

- Go over interview questions
- Literature Review of each member

## New Business

- Finish the literature table
- Weekly progress report
- Wiki page biographies

## What was Covered

- Sediment Testing contact
- Research that each team member found
  - Scuba Diving and pumping
  - Filtration
- Update on Wiki page
  - Need team member bios
- Literature table content
- How to use library literature search

## Need to Bring to Next Meeting

- Marshall: Contact chemistry department for sediment testing
- James: budget estimate from Molly Steiner and Tao Xing
- Eric: Complete meeting minutes template changes
- Literature review done by 5pm
- Some prototype ideas for model tank

Time End: 3:46pm

# Team Meeting

09/28/2016

Time Start: 2:34 pm

Location: UI Library

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- Sediment testing update

## New Business

- Tank ideas
- Progress report
- Go over target specs
- Progress report

## What was Covered

- Sediment testing update: Thomas Williams can help with mineral ID
- Tank ideas: swimming pool, metal feeding tank
- Target Specs: all on google drive
  - o Once a month cleaning or continuous filtering
  - o Filtering or removing sediment with water
  - o etc.

## Need to Bring to Next Meeting

- Everyone bring two design ideas to next Wednesday's meeting
- Complete biography info for wikipedia

Time end: 4:02 pm

# Team Meeting

09/29/2016

Time Start: 4:00 pm

Location: ME Conference Room

Attendees: Scott Smith, Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- Target spec questions
- Sediment testing
- Progress report

## New Business

- None

## What was Covered

- Target spec questions:
  - most likely sustainable
  - need to separate water and sediment
  - not far enough to really have an idea on some specs
- Logbook advice

## Need to Bring to Next Meeting

- 2 to 3 different design ideas as a group

Time end: 4:37pm

# Team Meeting

10/05/2016

Time Start: 6:30 pm

Location: UI Library

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- Sediment test contact
- Design ideas

## New Business

- Decide on design ideas

## What was Covered

- Sediment test contact: Dr. Williams has not yet responded to the email
- Design Ideas:
  - Rotating rod idea
  - Small vacuum on rod
  - Diaphragm idea
  - Multiple suction hoses idea
  - All would remove water and sediment and send it outside where it would be filtered

## Need to Bring to Next Meeting

- Everyone: Draw one of the ideas to present to Scott Smith and Tao Xing

Time End: 9:55 pm

# Team Meeting

10/06/2016

Time Start: 4:05 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Scott Smith, Tao Xing

Recorder of Minutes: Lucio Barajas

## Old Business

- 4 Design ideas

## New Business

- Filter Questions
- Tank Questions

## What was Covered

- Budget:
  - Scott will discuss it with Molly Steiner
- Feedback on the ideas:
  - Rotating ideas are the most probable and cost effective
  - We could consider adding some turbulence to pick up sediment easier
  - For all ideas we need to consider the minimum wall shear stress
  - Smoothing corners
  - Recirculating water could be used to add turbulence
- Filter Questions:
  - Consider a valve if needed to reduce flow to filter
  - Sand filter may be too slow
  - The best way to go may be a centrifugal filter for high flow rates
- Tank Questions:
  - Important part is being able to see device working
  - For now a smaller tank will be fine but for snapshot we will need something presentable
  - Bottom could be transparent

## Need to Bring to Next Meeting

- Everyone:
  - Logbooks due to Tao Xing's mailbox Friday October 07
  - Prepare Presentation for Snapshot Tuesday October 11
  - Send Tao the presentation by Sunday for review

Time End: 5:15 pm

# Team Meeting

10/12/2016

Time Start: 2:27 pm

Location: UI Library

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- Recap on Snapshot
- Sediment Testing

## New Business

- Budget
- Testing Tank
- Initial Testing

## What was Covered

- Recap on Snapshot #1
  - Everyone is mostly on the same stage as us
  - We need to do the presentation earlier so it can be reviewed earlier
- Sediment Testing
  - The sediment must be dry before it can, so Marshall filtered it first
- Testing Tank
  - We were thinking of testing the suction and rotation on a small scale tank
  - 15 gallon tank and then doing a larger prototype on a 150 gallon animal feeder tank
- Budget
  - We need to get Marshall reimbursed for the filter and funnel purchased
  - We plan to ask Scott and Tao about the tanks
- Initial Testing
  - We might need a pump to simulate the head at small scale
  - We should try to recreate a surrogate sediment
  - We could 3D print some parts if needed
- Additional Deliverables
  - Need to start an EES code to analyze our forces and velocities
  - We need to start modeling and refining the existing models

## Need to Bring to Next Meeting

- We will have another meeting on Sunday October 16 to refine our models
- Everyone: Bring an attempt at a surrogate for the meeting on Thursday October 13
- Marshall: Look into existing slip rings by Sunday October 16
- James: Get a budget estimate on the tanks by Thursday October 13



Time End: 3:20 pm

# Team Meeting

10/13/2016

Time Start: 4:02 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Tao Xing, Scott Smith

Recorder of Minutes: Lucio Barajas

## Old Business

- Recap on Snapshot
- Sediment Testing

## New Business

- Model Tank Ideas
- Initial Testing
- EES Modeling

## What was Covered

- Recap on Snapshot
  - Dr. Odom commented that the best design should consider maintenance as well
  - For us it is not as important as getting a functional and efficient design
- Sediment Testing
  - Sediment has been dried up and is ready for testing
  - Marshall will contact Thomas Williams to schedule a time
  - It is recommended we attend
- Model Tank Ideas
  - Proposed the tanks for purchasing
  - Scott will directly purchase the supplies we need (he will need a purchasing quote and location to purchase the item)
  - Scott has 55 gallon barrels of both plastic and steel we could use instead
  - For next meeting Scott should have the cut barrel for us to use
- Initial Testing
  - We should try to start testing the viscosity, density, specific weight
  - Stokes Law could help to find the viscosity
  - We might have to use the senior design suite for testing
  - Surrogate sediment may have to be flour or another mix
  - We will continue to simulate sediment by using viscosity as a benchmark
  - If we need a pump a fish tank pump may be sufficient
- EES Modeling

- o We need to get a model for the whole system started
- o A system curve would be a good start
- o We will have to decide what to model with the code

#### Need to Bring to Next Meeting

- Need to start a timeline for building the small scale prototype
- Everyone: Keep trying different surrogate sediments

Time End: 4:29 pm

# Team Meeting

10/16/2016

Time Start: 6:37 pm

Location: UI Library

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- EES Code
- Slip Rings

## New Business

- Solidworks Modeling
- More Design Ideas

## What was Covered

- EES Code
  - Governing equation is Bernoulli's equation
  - The pressure at the bottom of the tank is about 36 psi
  - Neglecting friction forces, using water as the fluid and with a 6 inch pipe, the volumetric flow rate is  $14.5 \text{ ft}^3/\text{s}$
  - We need to find out if this will cause too much or too little suction
- Slip Rings
  - Mostly used for electrical purposes
- Solidworks
  - We need to get the drum barrel from Scott before we model a small scale prototype
- More Design Ideas
  - We can have a smaller opening at the bottom of the tank and bigger at the top to create more suction

## Need to Bring to Next Meeting

- Eric: Talk to Tao about the EES code
- Marshall: Set up meeting to get sediment tested that works with everyone's schedule
- We need to pick up the barrel from Scott to begin testing

Time End: 8:03pm

# Team Meeting

10/19/2016

Time Start: 2:25 pm

Location: UI Library

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell

Recorder of Minutes: Lucio Barajas

## Old Business

- Sediment Testing
- Barrel for Testing
- EES Code

## New Business

- Prototype Parts

## What was Covered

- Sediment Testing
  - No news yet, Marshall will contact Tom Williams again
- Barrel for Testing
  - Scott Smith has the barrel ready for us
  - We will most likely be using Gauss Johnson 120 for testing
  - For the rolling platform we will order one later for the larger scale prototype
- EES Code
  - We plan to ask Dr. Xing in the meeting about our governing equation
- Prototype Parts
  - We plan to look for parts at ACE tomorrow and bring Scott a list of materials to buy
  - Mainly long PVC pipes and a pump

## Need to Bring to Next Meeting

- Everyone:
  - Bring Scott a list of materials and a quote
  - Ask Tao questions about the EES code

Time End: 3:00 pm

# Team Meeting

10/20/2016

Time Start: 4:02 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Tao Xing, Scott Smith

Recorder of Minutes: Lucio Barajas

## Old Business

- Sediment testing date

## New Business

- Quote of pump and system components
- Suction/viscosity governing equations
- Initial testing methods

## What was Covered

- Sediment testing date
  - Monday October 24th at 2:30 pm in the bottom floor of McClure
- Quote of pump and system components
  - Presented the materials we were thinking of purchasing
  - Scott has both a pump and most of the other parts in stock at the steam plant
- Suction/viscosity governing equations
  - To model suction we need to learn CFD
  - We could learn this or wait and take the class next semester
  - 2D analysis of the system should be enough
- Initial testing methods
  - It will mostly be to test suction
  - Scott suggest to use cut the bottom of the barrel off and glue some plexiglass to the bottom, then make a short stand and place mirrors at the bottom to see into the tank
  - We need to have system curve to choose a pump and an efficiency of at least 65% for our final prototype
  - We should try to find out density and viscosity
- Additional Information
  - Scott needs a title page and a picture of the whole group in a PowerPoint slide
  - For any printed materials for poster boards we should contact Molly Steiner for purchasing

## Need to Bring to Next Meeting

- Eric:
  - Evaluate the EES code with Dr. Xing
- James:
  - Design the PowerPoint presentation for next client meeting
  - Some requirements include:
    - What has been achieved so far
    - Problems/questions we have
    - Future plans and tasks
- Marshall:
  - In charge of sediment test results
  - Research typical sediments
- Lucio:
  - Complete a wiki page draft by Tuesday October 24th
  - Attend Wiki Workshop Session in GJ 114 at assigned time

Time End: 4:40 pm

# Team Meeting

10/27/2016

Time Start: 4:16 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Tao Xing, Scott Smith

Recorder of Minutes: Lucio Barajas

## Old Business

- Sediment Testing
  - Dr. Williams had to reschedule
  - New date is November 17th

## New Business

- Design
- EES code
- Research
- Wiki Page

## What was Covered

- Design
  - We presented the first prototype
  - Add color and labels to the parts
- EES code
  - System curve is a good start
  - No cavitation will occur at our point
  - We have outlet velocity plots depending on the height difference of the hose on the small scale tank
- Research
  - Marshall found common sediment viscosities
  - Shields stress could be important in analyzing if sediment will resuspend in the water
  - Found an excel sheet that will determine this once we know the viscosity and other details of the sediment
- Wiki Page
  - Rough draft started
  - Need to get documents of the designs

## Need to Bring to Next Meeting

- Everyone:
  - Begin testing with prototype (take videos to show for next meeting)
  - Idaho Pitch is coming up
  - Wiki page rough draft due November 4th

Time End: 4:49



# Team Meeting

11/03/16

Time Start: 4:00 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Eric Hill, James Rockwell, Tao Xing, Scott Smith

Recorder of Minutes: James Rockwell

## Old Business

- Sediment testing postponed to 11/17 when the sediment testing facility will be available again.
- The EES code has been updated for friction factor and is giving a fairly accurate value for volumetric flow rate
- H2Only has registered for the Idaho Pitch competition
  - Keep it simple

## New Business

- Design updates
  - Rotation of device around center post for hands free demonstration
  - A possible brush could be used to alleviate the need to overcome viscous forces on the sediment for removal
- Scott is going to look into getting some more sediment for us to run tests on and use.
  - Remember sediments will change from tank to tank
- Model system for Snapshot 2
  - 3d printing is available
  - Eric has experience printing
- Consider perforations rather than a slit or in combination with a slit

## Deadlines

- Design Review 11/17 at 4 pm. Same as the usual advisor meeting
- Logbook review 11/8

# Team Meeting

11/10/2016

Time Start: 4:03 pm

Location: ME Conference Room

Attendees: Marshall Bolen, Lucio Barajas, Eric Hill, James Rockwell, Tao Xing, Scott Smith

Recorder of Minutes: Lucio Barajas

## Old Business

- Rotation device

## New Business

- Minimum viscosity velocity
- Current animations
- Timeline of remaining weeks

## What was Covered

- Rotation device
  - Dr. Xing suggests we have a way to rotate device manually
  - We will add it to the next prototype
- Minimum viscosity velocity
  - Device will remove flour as long as there is some flow of water
  - Flour started having similar consistency as water
  - We may need to think of a different surrogate sediment
- Current animations
  - Dr. Xing noticed sharp edges on the “wing” which may cause separation at higher speeds
  - Avoid sharp edges
- Timeline of remaining weeks
  - Idaho Pitch coming Tuesday November 15 at 5pm
    - Dr. Xing suggests we learn our design very well to talk to many judges efficiently
  - Design Review Thursday November 17 at 4pm
    - Include background
    - An estimation of the economic analysis

## Need to Bring to Next Meeting

- 3D print parts (Schedule a time when Scott can watch)
- Start sediment filtration design
- Automated sediment detection research
- Prepare for Idaho Pitch
- Rough draft of our design review sent to Scott by Tuesday 11/15

Time End: 4:35pm